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EXAMINER	
WANG, QUAN ZHEN	
ART UNIT	PAPER NUMBER
2613	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/689,484	BERGANO, NEAL S.	
	Examiner	Art Unit	
	Quan-Zhen Wang	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45,49-78,81-96,98-139,142 and 143* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45,49-78,81-96,98-139,142 and 143* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 73-78, 81-82, 84-88, 95-96, 99-100, 131-132, 135-139, and 142-143 are rejected under 35 U.S.C. 102(e) as being anticipated by Taga et al. (U.S. Patent US 5,872,647).

Regarding claims 73, 95, and 131, Taga discloses an apparatus for transmitting an optical signal comprising: an optical signal source (fig. 1, light source 1) configured to generate an optical signal; a data modulator (fig. 1, data modulator 3) coupled to the optical signal source and configured to modulate data on the optical signal at a data modulation frequency; an amplitude modulator (fig. 1, modulator 2) coupled to the optical signal source and configured to modulate the intensity of the optical signal at an amplitude modulation frequency phase locked to the data modulation frequency (column 2, line 49-column 3, line 8). Taga further discloses an amplitude adjust mechanism (circuitry that adjusting the bias voltage; fig. 9) for selectively adjusting the

amplitude modulation imparted to the optical signal by the amplitude modulator (figs. 6-9).

Regarding claims 74, 96, and 132, Taga further teaches that the amplitude modulation frequency is equal to the data modulation frequency (fig. 2B and 2C).

Regarding claim 75, Taga further teaches that the data modulation frequency is provided by a clock (fig. 1, clock extraction unit 5) coupled to the amplitude modulator.

Regarding claim 76, Taga further teaches that the amplitude modulator modulates the amplitude of the optical signal at the data modulation frequency with a prescribed phase (fig. 1, phase adjusting unit 6).

Regarding claims 77-78, Taga further teaches that the system further comprising a clock for establishing the data modulation frequency and an electrical variable-delay line (fig. 1, phase adjusting unit 6) coupling the clock to the amplitude modulator for selectively varying the prescribed phase; and the electrical variable-delay line is a phase shifter.

Regarding claims 81, and 100, Taga further teaches that system further comprising a polarization modulator (polarization scrambler 4) coupled to the data modulator for modulating the state of polarization of the optical signal at the data modulation frequency such that an average value of the state of polarization over a modulation cycle is substantially equal to zero.

Regarding claim 82, Taga further teaches that the apparatus further comprising a clock for establishing the data modulation frequency (fig. 1, clock unit 7), the clock being coupled to the polarization modulator.

Regarding claim 85, Taga further teaches that the amplitude modulator modulates the amplitude of the optical signal at the data modulation frequency with a prescribed phase (fig. 1, phase adjusting unit 8).

Regarding claims 86, and 99, Taga further teaches that the system further comprising an electrical variable-delay line (fig. 1, phase adjusting unit 8) coupled to the polarization modulator for selectively varying the prescribed phase.

Regarding claims 87-88, Taga further teaches that the system further comprising a clock for establishing the data modulation frequency and an electrical variable-delay line (fig. 1, phase adjusting unit 8) coupling the clock to the polarization modulator for selectively varying the prescribed phase; and the electrical variable-delay line is a phase shifter.

Regarding claim 135-136, Taga further teaches that the amplitude modulation means comprises a data source coupled to the data modulator and provide an electrical waveform data (fig. 1).

Regarding claim 137, Taga further teaches that the amplitude modulation is coupled to the optical signal source (fig. 1).

Regarding claim 138, Taga further teaches that the amplitude modulation means is configured to provide an electrical waveform to the optical signal source for modulating the amplitude of the optical signal (fig. 1).

Regarding claim 139, Taga discloses that the optical signal source comprises a laser.

Regarding claims 142-143, Taga further discloses selectively varying the phase (fig.1, phase adjusting) and amount of the amplitude modulation (figs. 6-9).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taga et al. (U.S. Patent US 5,872,647)

Regarding claim 84, Taga differs from the claimed invention in that Taga does not specifically teach that the polarization modulator modulates the state of polarization by tracing the polarization of the optical signal along at least a portion of a Poincare sphere. However, the Examiner takes Official Notice that it is well known in the art to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere in the apparatus of Taga in order to generate polarization independent modulated optical signals.

5. Claims 83, 98, and 133-134 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taga et al. (U.S. Patent US 5,872,647) in view of Takayama et al. (K. Takayama et al., "An all-optical 10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter", *Tech digest* of *ECOC* '91, vol. MoC1-2, pp. 77-80, September 1991).

Regarding claims 83, 98, and 133-134, the system of Taga discloses the claimed invention except that Taga does not specifically teach that the polarization modulator is coupled to the data modulator through the amplitude modulator. However, it is well known in the art to use an amplitude modulator following a data modulator. For example, Takayama discloses that the amplitude modulator (fig. 1, Mach-Zehnder interferometer) is arranged to follow the data modulator (not shown in the figure). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to arrange the amplitude modulator following the data modulator in the system of Taga and, therefore, the polarization modulator is coupled to the data modulator through the amplitude modulator. One ordinary skill in the art would be motivated to do so in order to generate RZ signals from NRZ signals.

6. Claims 89, 91-94, and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taga et al. (U.S. Patent US 5,872,647) in view of Kitajima et al. (U.S. Patent US 5,515,196)

Regarding claims 89, and 101, the system of Taga differs from the claimed invention in that Taga does not specifically teach that the system further comprises a

phase modulator coupled to the data modulator, the phase modulator configured to provide optical phase modulation to the optical signal. However, it is well known in the art to include a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted. For example, Kitajima discloses an optical transmitter apparatus comprising a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted (fig. 13). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a phase modulator, as it is taught by Kitajima, in the optical transmitter apparatus of Taga to modulate the phase of the optical signal to be transmitted in order to reduce the time jitter of the optical signal caused by the influence of dispersion.

Regarding claim 91, Kitajima further teaches that the apparatus further comprising a clock for establishing the data modulation frequency, and wherein the clock is coupled to the phase modulator so that the phase modulator provides optical phase modulation at a frequency that is phase locked and equal to the data modulation frequency (fig. 13).

Regarding claims 92-93, the modified system of the modified system of Taga and Kitajima differs from the claimed invention in that Taga and Kitajima do not specifically disclose that the apparatus further comprising an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation. However, Taga discloses an

electrical variable-delay line coupling the clock to the amplitude modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation in order to synchronize the data modulation and the phase modulation.

Regarding claims 94, and 102, Taga further teaches that the amplitude modulator is driven by a sinusoidal signal to modulate the intensity of the optical signal (column 2, lines 52-56).

7. Claim 90 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taga et al. (U.S. Patent US 5,872,647) in view of Kitajima et al. (U.S. Patent US 5,515,196) and further in view of Takayama et al. (K. Takayama et al., "An all-optical 10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter", *Tech digest* of *ECOC* '91, vol. MoC1-2, pp. 77-80, September 1991).

Regarding claim 90, the modified system of Taga and Kitajima discloses the claimed invention except that Taga and Kitajima do not specifically teach that the polarization modulator is coupled to the data modulator through the amplitude

modulator. However, it is well known in the art to use an amplitude modulator following a data modulator. For example, Takayama discloses that the amplitude modulator (fig. 1, Mach-Zehnder interferometer) is arranged to follow the data modulator (not shown in the figure). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to arrange the amplitude modulator following the data modulator in the modified system of Taga and Kitajima, and, therefore, the polarization modulator is coupled to the data modulator through the amplitude modulator. One ordinary skill in the art would be motivated to do so in order to generate RZ signals from NRZ signals.

8. Claims 103-109, 111-115, 119-121, 125-127, and 130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (U.S. Patent US 5,515,196) in view of Taga et al. (U.S. Patent US 5,872,647).

Regarding claims 103 and 105-107, Kitajima discloses a transmission system comprising: a transmitter, an optical transmission path coupled to the transmitter; and a receiver coupled to the optical transmission path (fig. 11). Kitajima differs from the claimed invention in that Kitajima does not specifically disclose that the transmitter including: an optical signal source for generating an optical signal; a data modulator coupled to the optical signal source for modulating data at a data modulation frequency; an amplitude modulator coupled to the optical signal source for modulating the intensity of the optical signal; means for selectively adjusting the amplitude modulation imparted to the optical signal by the amplitude modulator; a clock coupled to the amplitude

modulator having a frequency that determines the frequency of the amplitude modulator, the frequency of the clock being phase locked to the data modulation frequency. However, such a transmitter is well known in the art. For example, Taga discloses a transmitter including: an optical signal source (fig. 1, light source 1) for generating an optical signal; a data modulator (fig. 1, data modulator 3) coupled to the optical signal source for modulating data at a data modulation frequency; an amplitude modulator (fig. 1, modulator 2) coupled to the optical signal source for modulating the intensity of the optical signal; means (circuitry that adjusting the bias voltage; fig. 9) for selectively adjusting the amplitude modulation imparted to the optical signal by the amplitude modulator (figs. 6-9); a clock (fig. 1, clock unit 5) coupled to the amplitude modulator having a frequency that determines the frequency of the amplitude modulator, the frequency of the clock being phase locked to the data modulation frequency (figs. 2B and 2C). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a transmitter, such as the one taught by Taga, in the system of Kitajima in order to increase the margin of the high-speed electro-optic polarization scrambler phase adjustment.

Regarding claim 104, Taga further teaches that the frequency of the clock is equal to the data modulation frequency (figs. 2B and 2C).

Regarding claim 108, Taga further teaches that system further comprising a polarization modulator (polarization scrambler 4) coupled to the data modulator for modulating the state of polarization of the optical signal at the data modulation

frequency such that an average value of the state of polarization over a modulation cycle is substantially equal to zero.

Regarding claim 109, Taga further teaches that the apparatus further comprising a clock for establishing the data modulation frequency (fig. 1, clock unit 7), the clock being coupled to the polarization modulator.

Regarding claim 111, Kitajima and Taga differ from the claimed invention in that Kitajima and Taga do not specifically teach that the polarization modulator modulates the state of polarization by tracing the polarization of the optical signal along at least a portion of a Poincare sphere. However, the Examiner takes Official Notice that it is well known in the art to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to modulate the state of polarization by tracing the polarization of an optical signal along at least a portion of a Poincare sphere in the apparatus of Kitajima and Taga in order to generate polarization independent modulated optical signals.

Regarding claim 112, Taga further teaches that the amplitude modulator modulates the amplitude of the optical signal at the data modulation frequency with a prescribed phase (fig. 1, phase adjusting unit 8).

Regarding claim 113, Taga further teaches that the system further comprising an electrical variable-delay line (fig. 1, phase adjusting unit 8) coupled to the polarization modulator for selectively varying the prescribed phase.

Regarding claims 114-115, Taga further teaches that the system further comprising a clock for establishing the data modulation frequency and an electrical variable-delay line (fig. 1, phase adjusting unit 8) coupling the clock to the polarization modulator for selectively varying the prescribed phase; and the electrical variable-delay line is a phase shifter.

Regarding claim 119, Kitajima further discloses an optical transmitter apparatus comprising a phase modulator in an optical transmitter to modulate the phase of the optical signal to be transmitted (fig. 13).

Regarding claim 120, Kitajima further discloses that the phase modulator follows the data modulator, and therefore, the amplitude modulator is coupled to the data modulator through the phase modulator.

Regarding claim 121, Kitajima further discloses that the optical phase modulator provides optical phase modulation to the optical signal while imparting substantially no polarization modulation thereto (fig. 13).

Regarding claim 125, Kitajima further teaches that the apparatus further comprising a clock for establishing the data modulation frequency, and wherein the clock is coupled to the phase modulator so that the phase modulator provides optical phase modulation at a frequency that is phase locked and equal to the data modulation frequency (fig. 13).

Regarding claims 126-127, the modified system of the modified system of Kitajima and Taga differs from the claimed invention in that Kitajima and Taga do not specifically disclose that the apparatus further comprising an electrical variable-delay

line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation. However, Taga discloses an electrical variable-delay line coupling the clock to the amplitude modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an electrical variable-delay line coupling the clock to the phase modulator for selectively varying the phase of the optical phase modulation provided by the phase modulator, and the electrical variable-delay line is a phase shifter, and the phase modulator provides phase modulation at a frequency that is phase locked and equal to the data modulation in order to synchronize the data modulation and the phase modulation.

Regarding claim 130, Taga further teaches that the amplitude modulator is driven by a sinusoidal signal to modulate the intensity of the optical signal (column 2, lines 52-56).

9. Claim 110 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (U.S. Patent US 5,515,196) in view of Taga et al. (U.S. Patent US 5,872,647) and further in view of Takayama et al. (K. Takayama et al., "An all-optical

10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter", *Tech digest* of *ECOC* '91, vol. MoC1-2, pp. 77-80, September 1991).

Regarding claim 110, the modified system of Kitajima and Taga differs from the claimed invention in that that Kitajima and Taga do not specifically teach that the polarization modulator is coupled to the data modulator through the amplitude modulator. However, it is well known in the art to use an amplitude modulator following a data modulator. For example, Takayama discloses that the amplitude modulator (fig. 1, Mach-Zehnder interferometer) is arranged to follow the data modulator (not shown in the figure). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to arrange the amplitude modulator following the data modulator in the modified system of Kitajima and Taga so that the polarization modulator is coupled to the data modulator through the amplitude modulator. One ordinary skill in the art would be motivated to do so in order to generate RZ signals from NRZ signals.

10. Claims 116-118, 122-124, and 128-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (U.S. Patent US 5,515,196) in view of Taga et al. (U.S. Patent US 5,872,647) and further in view of Fontana et al. (U.S. Patent US 5,910,852).

Regarding claims 116, and 122, Kitajima and Taga have been discussed above in regard with claim 103. The modified system of Kitajima and Taga comprising means for transmitting a predetermined characteristic to the transmitter and means for

selectively varying the amplitude modulation imparted to the optical signal to optimize the value of the predetermined characteristic (fig. 1). The modified system of Kitajima and Taga differs from the claimed invention in that Kitajima and Taga do not specifically teach that the system comprising means for measuring a predetermined characteristic of an optical signal received by the receiver. However, it is well known in the art to include means for measuring a predetermined characteristic of an optical signal received by the receiver. For example, Fontana discloses means for measuring a predetermined characteristic of an optical signal received by the receiver (fig. 1, analyzer 45; column 2, lines 48-63). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate means for measuring a predetermined characteristic, as it is disclosed by Fontana, in the modified system of Kitajima and Taga in order to measure quality of the transmitted optical signal.

Regarding claims 106-107, Taga further teaches selectively adjusting the phase of the amplitude modulation (fig. 1, phase adjusting) and selectively adjusting the amount of the amplitude modulation (figs. 6-9).

Regarding claims 117-118, 123-124 and 128-129, Fontana further teaches that the predetermined characteristic id signal to noise ratio (column 2, lines 48-63) and the Q-factor can be deducted from the SNR.

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 45-139 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 5,946,119. The following table summarizes the correspondence of claims between the application and the patent:

The Instant Application	Patent 5,946,119
Claims 45-46, 49-54, 73-78, 95-98, 131-139	Claims 1-3
Claims 54-55	Claims 2,4
Claims 56-59, 60-62, 81-88 and 99-100	Claims 6-8, and 12
Claims 62-63, and 87-88	Claims 5, and 12-13
Claims 64-72, 89-94, and 101-102	Claims 10-15
Claims 45, 64-73, 89-95, and 101-102	Claims 22-25
Claims 103-130	Claims 1-8, 22-25
Claims 117-118, 123-124 and 128-129	Claims 14-15, and 19

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims in the continuation are broader that the patented claims, In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982) and In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993), broad claims in the instant application are rejected as obvious double patenting over narrow claims of copending Application. For example, claim 1 of the present invention does not claim the specific features of "a clock coupled to said amplitude modulator and said data modulator, said clock having a frequency that determines the modulation frequency of the amplitude modulator, said frequency of the clock being phase locked and equal to said predetermined frequency". Therefore, claim 1 of the instant invention is broader than claim 1 of the copending Application.

13. Claims 45-139 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-49 of U.S. Patent No. 6,556,326 B2. The following table summarizes the correspondence of claims between the application and the patent:

The Instant Application	Patent 6,556,326 B2
Claims 45-46, 49-54, 73-78, 95-98, 131-130	Claims 1-5, 19-22, and 49
Claims 54-55	Claims 3, 5, and 22-25
Claims 56-59, 60-62, 81-88 and 99-100	Claims 6-9
Claims 62-63, and 87-88	Claims 8-9, and 28-29
Claims 64-72, 89-94, and 101-102	Claims 10-13, and 26-29
Claims 45, 64-73, 89-95, and 101-102	Claims 19-35
Claims 103-130	Claims 1-5, and 36-48

Claims 117-118, 123-124 and 128-129	Claims 46-47

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims in the continuation are broader that the patented claims, In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982) and In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993), broad claims in the instant application are rejected as obvious double patenting over narrow claims of copending Application. For example, claim 1 of the present invention does not claim the specific features of "a clock coupled to said amplitude modulator and said data modulator, said clock having a frequency that determines the modulation frequency of the amplitude modulator, said frequency of the clock being phase locked and equal to said predetermined frequency". Therefore, claim 1 of the instant invention is broader than claim 1 of the copending Application.

14. Claims 45-139 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6,744,992 B2. The following table summarizes the correspondence of claims between the application and the patent:

The Instant Application	Patent 6,744,992 B2
Claims 45-46, 49-54, 73-78, 95-98, 131-139	Claims 1-6, 14, 15 and 16
Claims 54-55	Claims 1-6, 14, 15 and 16
Claims 56-59, 60-62, 81-88 and 99-100	Claims 7-9
Claims 62-63, and 87-88	Claims 10
Claims 64-72, 89-94, and 101-102	Claims 11-13

Claims 45, 64-73, 89-95, and 101-102	Claims 19
Claims 103-130	Claim 17, 19, 20
Claims 117-118, 123-124 and 128-129	Claim 17, 19, 20

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims in the continuation are broader that the patented claims, In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982) and In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993), broad claims in the instant application are rejected as obvious double patenting over narrow claims of copending Application. For example, claim 1 of the present invention does not claim the specific features of "a clock coupled to said amplitude modulator and said data modulator, said clock having a frequency that determines the modulation frequency of the amplitude modulator, said frequency of the clock being phase locked and equal to said predetermined frequency". Therefore, claim 1 of the instant invention is broader than claim 1 of the copending Application.

Allowable Subject Matter

15. Claim 45-46 and 49-72 would be allowable if appropriate terminal disclaimers are submitted to overcome the double-patenting rejections set forth in this Office Action.

Response to Arguments

16. Applicant's arguments filed November 15, 2006 have been fully considered but they are not persuasive.

Applicant argues that Applicant argues that "Applicants find nothing in Taga that teaches or suggests 'selectively adjusting' amplitude modulation in a system or method as set forth in claims 73, 95, 103 and 131." Examiner respectfully disagrees with Applicant. Taga explicitly illustrates that the amplitude modulation is adjusted in fig. 6-8. Taga also discloses that the adjustment is done by varying the bias voltage and driving voltage, as illustrated in fig. 9.

Applicant argues that the adjustment mechanism provides significant advantages. In particular, "Allowing selective adjustment of the amplitude modulation facilitates setting the modulation to achieve a desired performance, e.g. maximum Q-factor." However, these argued terminologies are not reflected in the claims.

Therefore, the rejections of the claims still stand.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw
1/22/2007

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